Captivate
EDUCATION

SAMPLE QUESTIONS
One question from each section of this exam, with its marking scheme, so teachers can see what the full paper is like. Full exam and solutions: captivateeducation.com.au/trial-exams

Product Design and Technologies

Question and Answer Book

Practice examination 1 – 2027

- Reading time is 15 minutes
- Writing time is 1 hour 30 minutes

Approved materials

- Coloured pencils, water-based pens and markers

Materials supplied

- Question and Answer Book

Students are not permitted to bring mobile phones and/or any unauthorised electronic devices into the examination room.

Contents

17 questions (90 marks)

Practice material in the layout of the 2025 VCAA paper – generated 2027. Not a VCAA examination.

SAMPLE

Instructions

- Answer **all** questions in the spaces provided.
- Write your responses in English.

Sample – Question 1 of the 17 questions in this section; Question 1 is shown to part c of its 4 parts.

Question 1 (4 marks)

Use the following information to answer Questions 1–5.

The Shoreline beach wheelchair

Saltwind Mobility, a small design and manufacturing company in Torquay, has developed the Shoreline, a push-type beach wheelchair that lets people who use wheelchairs reach the sand and shallow water with a companion. The frame is marine-grade aluminium tube, bent to shape on a CNC tube bender. Stainless-steel brackets are laser cut from sheet: the brackets that carry the rear axle are welded to the frame, while the footrest bracket is bolted on. Wide balloon tyres spread the weight of the chair and its user over soft sand. The seat and backrest slings are recycled-PET mesh, stitched around the frame tubes. The armrest grips are 3D printed in-house from thermoplastic polyurethane (TPU), a flexible innovative polymer that does not absorb water. Quick-release pins allow the wheels and the push handle to be removed for transport, storage and repair.

Saltwind plans to make about 300 chairs a year in a low-volume production setting, selling mainly to councils and surf life saving clubs.

At a council beach-access day, 20 wheelchair users each trialled two prototypes on soft sand, pushed by a companion: Prototype 1 had narrow balloon tyres and Prototype 2 had wide balloon tyres. Each participant rated how easily each prototype moved over the sand (Graph 1). After trying both prototypes, each participant named the **one** feature they most wanted improved (Graph 2).

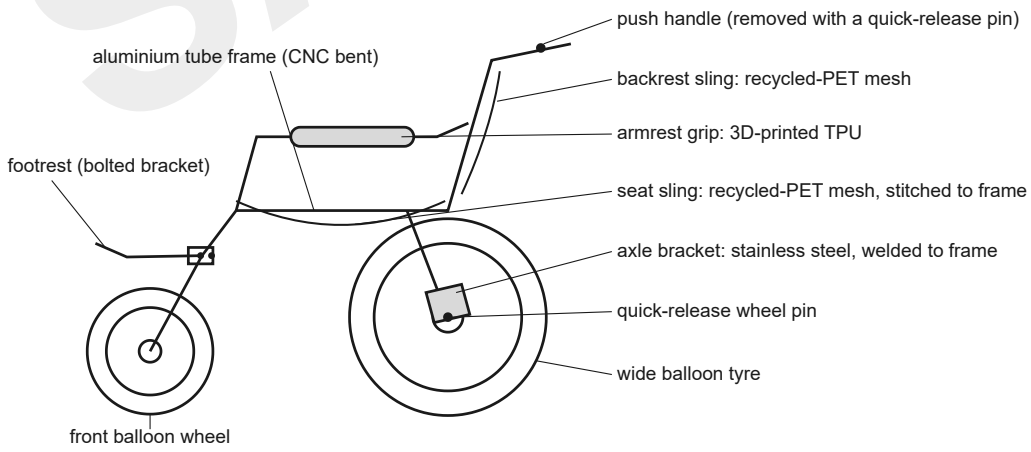
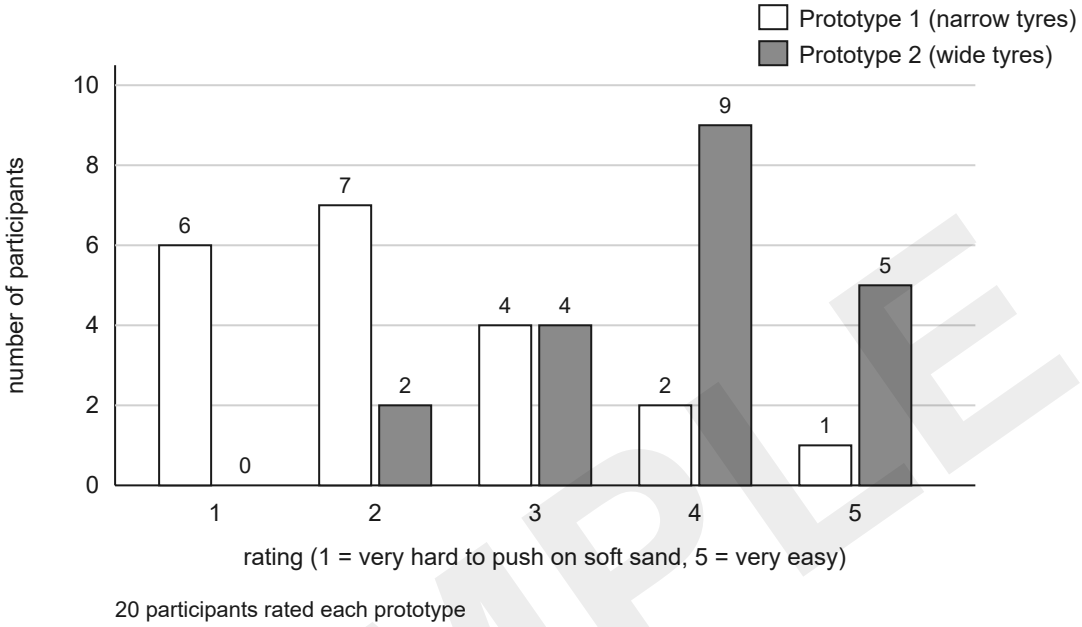


Figure 1

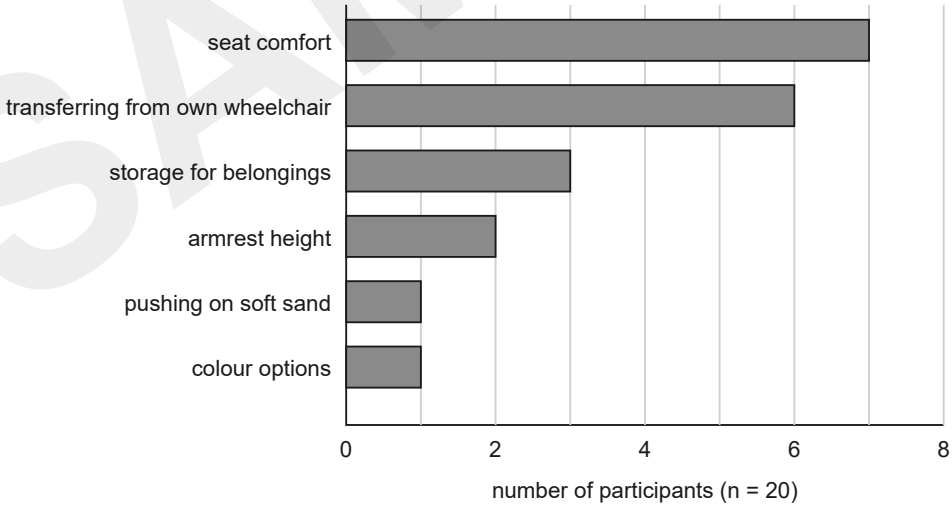
SAMPLE

[Photograph placeholder] A wheelchair user seated in the Shoreline at the water's edge, pushed by a companion, with the wide balloon tyres on wet sand.

Figure 2



Graph 1



Graph 2

a. Identify the type of data shown in Graph 1. 1 mark

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b. Interpret Graph 1 to identify the rating given most often to Prototype 2. 1 mark

c. Saltwind gathered this research directly from wheelchair users at a public event.
Describe **one** ethical consideration Saltwind needed to address when gathering this research from the participants, and how it could have been addressed. 2 marks

End of sample questions

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Marking scheme for the sample questions

Question 1a. (1 mark)

Identify the type of data shown in Graph 1.

To be awarded full marks, students were required to:

Identify the type of data shown in Graph 1.

Common errors included: qualitative data — the ratings record an opinion, but they are recorded and presented as numbers.

Mark allocation: 1 mark for quantitative data (numerical ratings on a 1–5 scale, shown as counts of participants).

Sample full-mark response

> Quantitative data.

Question 1b. (1 mark)

Interpret Graph 1 to identify the rating given most often to Prototype 2.

To be awarded full marks, students were required to:

Read Graph 1 and identify the rating given most often to Prototype 2.

Common errors included: reading the Prototype 1 bars (rating 2); giving the number of participants (9) instead of the rating.

Mark allocation: 1 mark for a rating of 4 (given by 9 of the 20 participants).

Sample full-mark response

> A rating of 4 — nine of the 20 participants gave Prototype 2 a rating of 4.

Question 1c. (2 marks)

Saltwind gathered this research directly from wheelchair users at a public event.
*Describe **one** ethical consideration Saltwind needed to address when gathering this research from the participants, and how it could have been addressed.*

To be awarded full marks, students were required to:

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Describe one ethical consideration in gathering research from the wheelchair users at the event and how Saltwind could address it.

Common errors included: an ethical feature of the wheelchair rather than of gathering the research; naming a research method with no ethical consideration.

Mark allocation: 1 mark for a relevant ethical consideration when gathering research (informed consent; privacy and confidentiality of personal or health information; the right to withdraw; avoiding harm or discomfort during the trial; accessibility of the survey); 1 mark for how it could be addressed in this trial.

Sample full-mark response

> Informed consent: participants may share details about their disability and health. Before the trial Saltwind should explain in plain language what the trial involves, how the ratings will be used and that they can stop at any time, and then record each participant's signed or verbal consent.

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